

Journal of Experimental Botany. High temperature stress and its effect on pollen development and morphological components of harvest index in the C3 Model Grass *Brachypodium distachyon*. Jeffrey Harsant, Lazar Pavlovic, Greta Chiu, Stefanie Sultmanis, Tammy L. Sage.

Supplementary Table S1. The effect of increasing day and night temperatures on pollen number (A) and pollen abortion (B) in *Brachypodium distachyon*, lines Bd21 and Bd21-3. A three-way ANOVA analysis showed significant effects of line, day temperature and night temperature at $p < 0.001$ (Tukey's post hoc test). There was also a statistically significant interaction between line, day temperature and night temperature ($p < 0.001$).

Supplementary Figure S1. Vegetative and reproductive morphology of *B. distachyon*. (A) Phytomeric structure of *Brachypodium distachyon*, based on the system used for barley (Forster *et al.*, 2007). (B) Intact plant. (C) Tiller with axillary branches. (D) Spike composed of spikelets. (E) Floret arrays in a spikelet. Pos = position.

Forster BP, Franckowiak JD, Lundqvist U, Lyon J, Pitkethly I, Thomas WTB. 2007. The barley phytomer. *Annals of Botany* **100**, 725-733

Supplementary Figure S2. The effect of 24 and 28 °C on the probability of grain production at each floret position within a spikelet in *Brachypodium distachyon*, lines Bd21 and Bd21-3. Floret positions 1-15 indicate positions of a floret from the base (1) to the tip (15) of the spikelet. Also see Supplementary Figure S1. Error bars = 95% CI.

Supplementary Figure S3. The effect of increasing temperatures on the frequency of anther dehiscence versus ovary length in *Brachypodium distachyon*.

(A)

Line	Pollen Number / Anther (Day/Night Temperatures, °C)					
	24/18	24/23	32/18	32/23	36/18	36/23
Bd21	497.0 ± 13.0	408.0 ± 16.6	328.2 ± 30.0	325.6 ± 16.0	179.0 ± 35.3	154.4 ± 36.7
Bd21-3	410.2 ± 15.6	247.5 ± 20.7	224.7 ± 32.0	189.2 ± 16.5	152.7 ± 27.6	166.6 ± 27.1

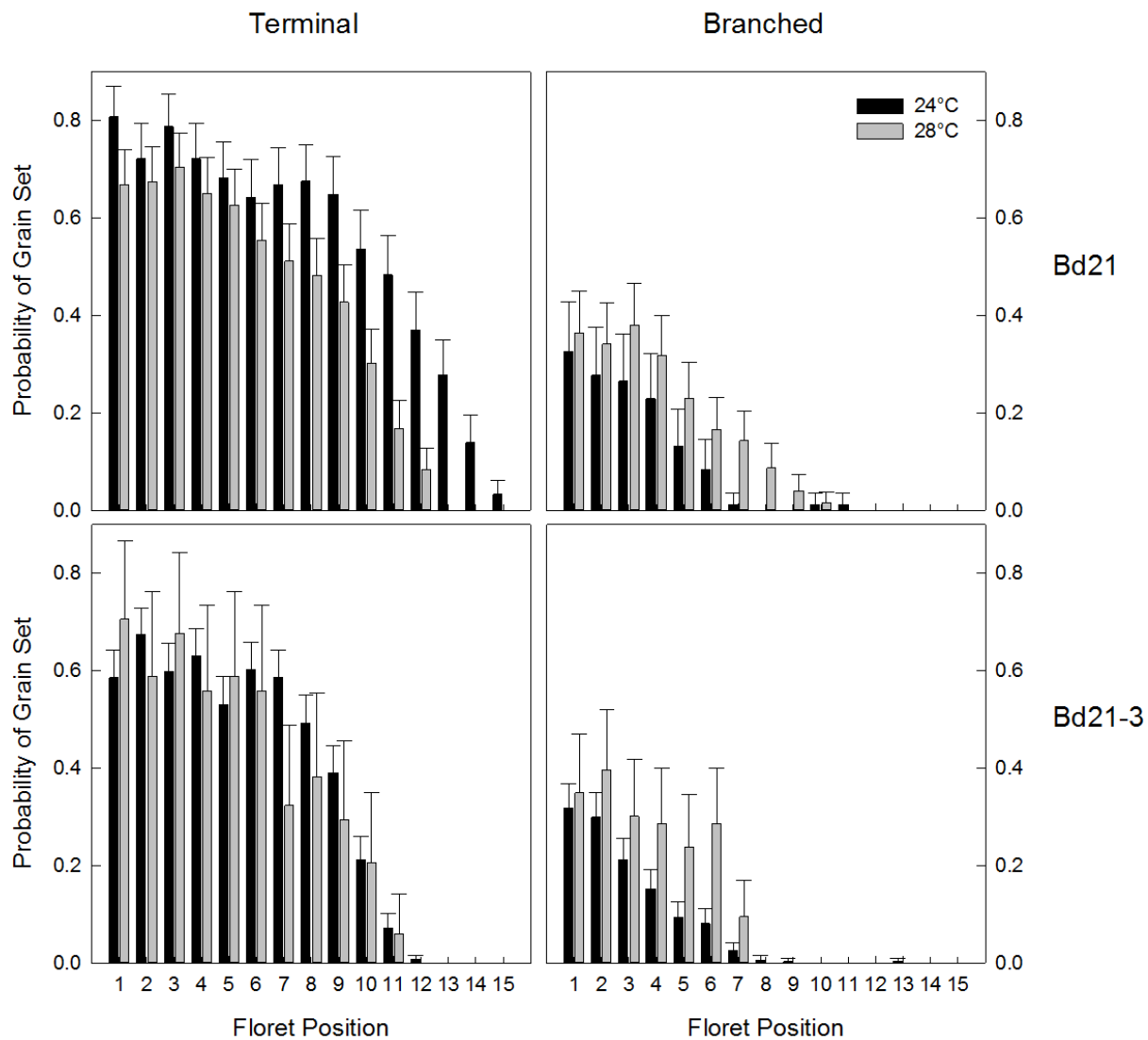
(B)

Line	% Pollen Abortion (Day/Night Temperatures, °C)					
	24/18	24/23	32/18	32/23	36/18	36/23
Bd21	1.3 ± 0.3	0.8 ± 0.3	9 ± 3.4	12.5 ± 5.8	86.1 ± 12.4	83.3 ± 16
Bd21-3	2.1 ± 0.8	4.6 ± 2.5	16.8 ± 8.6	33.8 ± 11.6	88.4 ± 9	100 ± 0

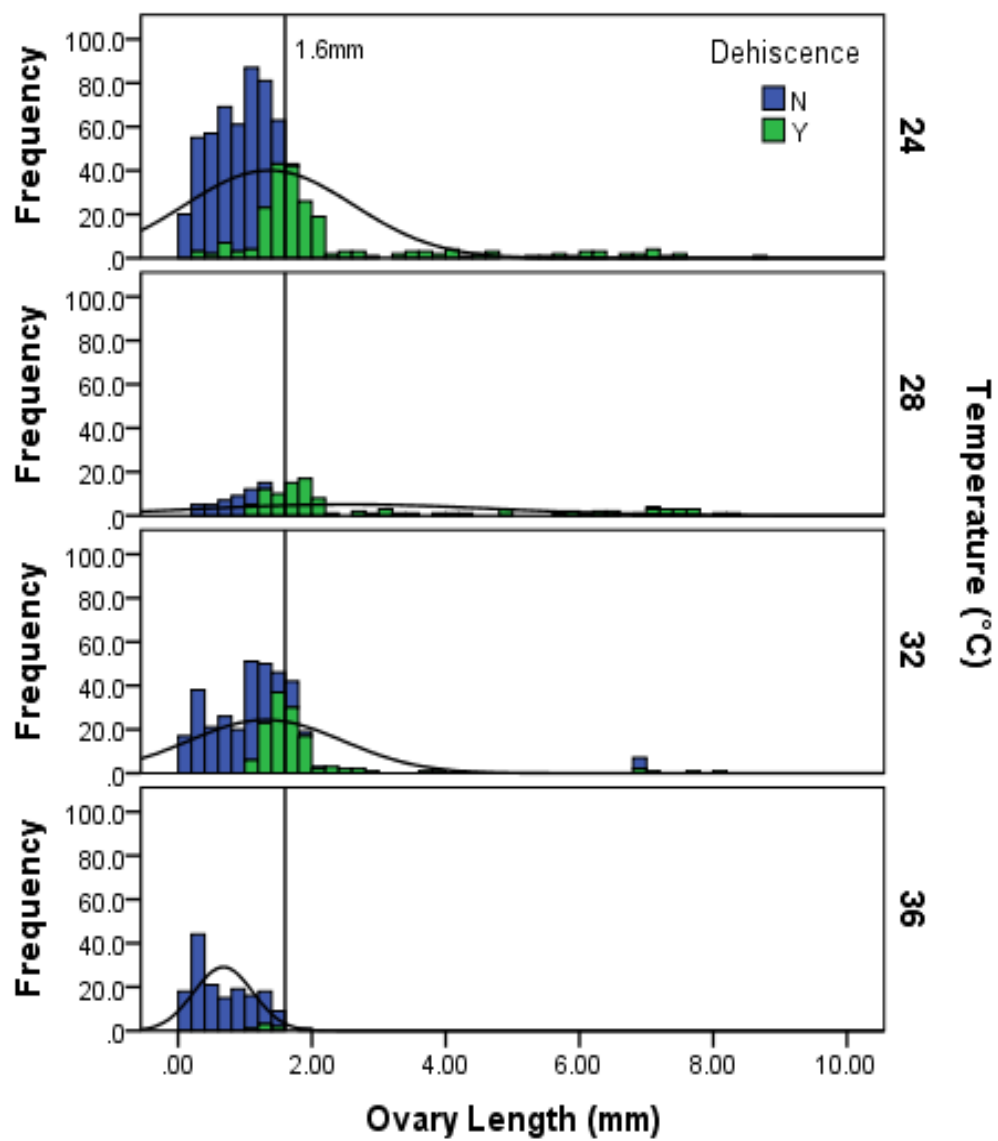
Supplementary Table S1



Supplementary Figure 1



Supplementary Figure S2



Supplementary Figure S3